

# Territorial Poverty Analysis: a Comparison of Different Approaches

## *Analisi di Povertà a Livello Territoriale: Differenti Approcci a Confronto*

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**Riassunto:** La scelta di una linea di povertà, cioè di una soglia (di spesa o reddito) che discrimini le famiglie in povere e non povere costituisce una scelta arbitraria. Usualmente viene utilizzata una soglia pari alla spesa media pro-capite calcolata a livello nazionale. Tale metodologia è stata oggetto più volte di critiche, in quanto la determinazione di una soglia nazionale non consente di cogliere particolari evidenze di carattere territoriale. In questo lavoro vengono utilizzate linee di povertà distinte per ripartizione geografica, calcolate sulla base delle spese mensili familiari dell'Indagine sui consumi. L'analisi che ne consegue pur presentando livelli diversi dei principali indicatori di povertà, mostra profili di povertà analoghi a quelli che emergono dalla tradizionale analisi.

**Keywords:** poverty threshold, sampling error.

## 1. Introduction

The analysis of poverty is based upon a relative standard according to which the state of poverty is defined in relation to the mean consumption expenditure of the population (poverty threshold). More precisely, households with one member are classified as being poor if their expenditure is less or equal than the two-thirds of the national per capita average expenditure. To determine the equivalence expenditure of households of different size the modified OECD equivalence scale<sup>1</sup> is used. This threshold is defined as “relative” because it is determined every year with reference to the average consumption expenditure of the households. The main indicators used to measure poverty are: i) Head Count Ratio (HCR), defined as ratio of the number of poor households to the total resident households, ii) Poverty Gap (PG) which measures, on average, how far the expenditures of poor households fall short of the poverty line, iii) Gini coefficient, that measures the inequality in the poor household expenditure distribution, iv) Sen index, expressed as a linear combination of the three foregoing indicators (G. De Santis, 1996). A common criticism of the poverty analysis is that it fails to account for different geographic area variations in purchasing power (Citron and Michael, 1995). For instance, living in the North of the country tends to be more expensive than in the South, so that northern households will need, on average, more resources to meet their standard consumption needs. Actually such adjustments have never been made in the poverty measure

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<sup>1</sup> The first adult counts as 1.0, an additional adult counts as 0.5 and children count as 0.3.

for a lack of a sufficient data source to estimate well-being differences across territorial areas. The aim of this paper is to analyse territorial poverty using two different approaches: the first based on a national poverty threshold, the second on three different geographical poverty lines (North, Centre, and South). The poverty lines are obtained on the basis of the data recorded through the Households Budget Survey, a complex sampling survey (two stages stratified) that involved in a year about 24,000 households. Taking into account sampling error, a confidence interval (at 95%) is constructed around every estimated poverty line. The table 1 shows the figures in 2000.

**Table 1.** *Poverty lines, relative sampling errors, confidence intervals. 2000*

	Sample size	Poverty line* (Euro)	Relative sampling error (%)	Confidence Intervals	
				Inferior limit	Superior limit
North	10,182	652.26	0.94	640.24	664.28
Centre	4,501	540.43	1.82	521.15	559.71
South	9,045	412.47	1.29	402.04	422.90
Italy	23,728	543.77	0.72	536.09	551.44

Source: Household Budget Survey

\* The poverty line is for one member household

The highest poverty line is in the North (€ 652), corresponding with the highest living condition standards, the lowest in the South (€ 412). The poverty line in the Centre lays in the middle, being, in fact, quite similar to the national value (€ 544). The relative sampling errors in the three geographical areas are bigger than national error, however they do not cause reliability in the estimated values.

## 2. Poverty Analysis With The National Line

In the year 2000, the value of the national poverty line is € 543.77. According to this value 2,756,354 households are living in poverty and the Head Count Ratio is 12.6% at national level.

**Table 2:** *Main indicators of relative poverty by geographical area (national poverty line). 2000*

	North	Centre	South	Italy
Head Count Ratio %	6.1	10.0	23.5	12.6
Poverty Gap %	20.0	21.0	22.3	21.6
Gini coefficient <sup>1</sup>	0.107	0.114	0.125	0.120
Sen index	0.017	0.030	0.075	0.039

(1) It is calculated among poor households

The national figures are the result of different conditions in the three geographical areas: in the South the incidence of poverty is more than 23%, while in the North it is 6.1%. According to the PG not only there are more poor households in the South, but they are suffering greater degree of distress (22.3% against 21.6% at national level). The inequality is even more evident if we consider the distribution of poor households: the Gini coefficient is 0.125 in the South. Another way of looking at the extent of relative poverty is to calculate the Sen index which synthesizes other indicators. The index is 0.039 at national level, with a range between 0.017 (North) to 0.075 (South). In the North single elderly persons show a higher HCR (12.7%), in

the Centre also couples with reference person over 65 years old present a high incidence of poverty (19.3%). Households with aggregated members (other typologies) also show a high incidence of poverty (17.8% in the national average and 33.9% in the South). In the South among couples with children, households with three or more children present a greater incidence of poverty, with a HCR equal to 32.6%.

**Table 3:** *Head Count Ratio, confidence intervals (C.I.)<sup>1</sup> by household typologies and geographical area- (national poverty line). 2000 (percentage values)*

	North			Centre			South			Italy		
	C.I.			C.I.			C.I.			C.I.		
	Inf. Sup.			Inf. Sup.			Inf. Sup.			Inf. Sup.		
	HCR	Limit	Limit	HCR	Limit	Limit	HCR	Limit	Limit	HCR	Limit	Limit
Total households	<b>6.1</b>	5.7	6.3	<b>10.0</b>	9.4	10.7	<b>23.5</b>	22.6	24.2	<b>12.6</b>	12.0	13.0
One person < 65 years old	<b>4.9</b>	4.9	4.9	*	*	*	<b>12.1</b>	11.8	12.4	<b>6.2</b>	6.2	6.3
One person ≥ 65 years old	<b>12.7</b>	12.0	13.0	<b>15.0</b>	14.5	16.1	<b>30.6</b>	30.1	31.9	<b>18.4</b>	17.8	19.2
Couple with r.p. <sup>2</sup> < 65 years old	<b>1.9</b>	1.9	2.3	*	*	*	<b>12.9</b>	12.1	13.3	<b>4.8</b>	4.6	5.3
Couple with r.p. <sup>2</sup> ≥ 65 years old	<b>8.0</b>	7.8	8.2	<b>19.3</b>	16.9	20.3	<b>33.5</b>	32.6	34.1	<b>18.8</b>	18.0	19.4
Couple with one child	<b>3.5</b>	3.3	3.7	<b>6.8</b>	6.3	7.9	<b>18.9</b>	18.0	19.5	<b>8.6</b>	8.1	9.0
Couple with two children	<b>4.8</b>	4.3	5.0	<b>8.3</b>	7.7	8.5	<b>20.4</b>	19.2	20.8	<b>12.1</b>	11.3	12.4
Couple with three or more	<b>8.2</b>	8.2	9.7	*	*	*	<b>32.6</b>	31.8	33.4	<b>23.9</b>	23.3	24.8
Single parent	<b>6.0</b>	5.3	6.2	<b>11.2</b>	11.0	12.1	<b>22.7</b>	22.3	23.0	<b>12.3</b>	11.8	12.7
Other typologies	<b>9.1</b>	8.4	9.4	<b>14.7</b>	14.1	16.2	<b>33.9</b>	31.8	34.8	<b>17.8</b>	16.8	18.6

Source: Household Budget Survey

(1)The confidence interval values may be equal to HCR because of rounded value. (2) r.p.= reference person

(\*) The datum is not significant because of the sample size

### 3. Poverty Analysis With Territorial Lines

In 2000, the analysis of poverty using territorial lines shows less disparity in poverty levels between households living in different geographical areas.

**Table 4:** *Main indicators of relative poverty by geographical area- (territorial poverty lines). 2000*

	North	Centre	South
Head Count Ratio %	11.3	9.7	10.5
Poverty Gap %	16.1	19.5	25.5
Gini coefficient <sup>1</sup>	0.114	0.114	0.109
Sen Index	0.029	0.028	0.035

(1) It is calculated among poor households

The percentage of poor households in the North is 11.3% (6.1% with national line), the Poverty Gap decreases to 16.1%, but Gini coefficient among poor households shows more inequality. Consequently the value of Sen index is 0.029. No important change results in the Centre. The South presents a HCR of 10.5%, but the PG is more than 25%. The Sen index is a half of that calculated with national line also because of a Gini coefficient of 0.109.

The poverty analysis by household typologies (see table 5) shows different HCR levels, but no change in poverty profile.

**Table 5.** *Head Count Ratio, confidence interval (C.I.)<sup>1</sup> by household typologies and*

*geographical area- (territorial poverty lines). 2000 (percentage values)*

	North			Centre			South		
	C.I.			C.I.			C.I.		
	HCR	Inf. limit	Sup. limit	HCR	Inf. limit	Sup. limit	HCR	Inf. limit	Sup. limit
Total households	<b>11.3</b>	10.7	12.1	<b>9.7</b>	8.4	11.2	<b>10.5</b>	9.7	11.4
One person < 65 years old	<b>7.2</b>	7.1	7.4	*	*	*	<b>6.1</b>	5.3	6.1
One person ≥ 65 years old	<b>20.5</b>	19.2	22.2	<b>15.0</b>	12.9	17.0	<b>16.2</b>	14.9	17.3
Couple with r.p. <sup>2</sup> < 65 years old	<b>5.7</b>	5.3	5.8	*	*	*	<b>4.9</b>	4.7	5.2
Couple with r.p. <sup>2</sup> ≥ 65 years old	<b>14.3</b>	13.5	15.6	<b>18.5</b>	15.2	20.9	<b>16.6</b>	15.5	17.9
Couple with one child	<b>7.8</b>	7.4	8.6	<b>6.4</b>	5.7	8.1	<b>6.9</b>	6.6	7.6
Couple with two children	<b>10.2</b>	9.8	10.4	<b>8.0</b>	6.6	8.8	<b>8.4</b>	7.5	9.4
Couple with three or more children	<b>15.1</b>	14.4	17.0	*	*	*	<b>12.6</b>	11.8	14.0
Single parent	<b>12.3</b>	11.1	12.7	<b>11.0</b>	10.1	12.2	<b>9.7</b>	9.2	10.6
Other typologies	<b>16.7</b>	15.3	18.2	<b>14.2</b>	13.6	17.3	<b>17.9</b>	17.2	19.4

Source: Household Budget Survey

(1) The confidence interval values may be equal to HCR because of rounded value. (2) r.p.= reference person

(\*) The datum is not significant because of the sample size

## 4. Conclusions

The number of poor households depends on where the poverty line is drawn. The figures on poverty show disparity in poverty levels in the three geographical areas of the country. The poverty analysis based on territorial poverty lines smoothes these differences, but it produces an increase of the phenomenon in the North and a decrease in the South. However the poor households living in the South present more deepness of their condition. The figures obtained with different approaches show that the different method of poverty analysis have no impacts on the rank of the HCR by household characteristics. The optimal solution could be to take in account different geographic area variation in purchasing power by using a national line. This method is applied in comparison figures between different countries, but at the moment is not possible to apply between regions of the same country.

## References

- Bottiroli Civardi M., Chiappero Martinetti E. (1997) Strutture familiari e benessere: quali fattori influenzano maggiormente il tenore di vita delle famiglie italiane? Convegno Banca d'Italia - CIDE Ricerche quantitative per la politica economica, Perugia 6-8 Novembre.
- Brandolini A. (2001) Disuguaglianza e povertà in Brucchi Luchino (a cura di), *Manuale di economia del lavoro*, Bologna, Il Mulino.
- Citro C. F., Michael., R. T (1995) Measuring Poverty. A new approach, Washington D.C., National Academy Press.
- De Santis G. (1996) Le misure della povertà in Italia: scale di equivalenza e aspetti demografici, Istituto Poligrafico e Zecca dello Stato, Roma.
- ISTAT (2001) Poverty in Italy Year 2000 Nota Rapida n. 3, Anno 6.
- Trivellato U. (1998) Il monitoraggio della povertà e della sua dinamica: questioni di misura e evidenze empiriche, *Statistica*, anno LVIII, n.4, Roma, 549-575.